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EXAMINER	
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ART UNIT	PAPER NUMBER
2623	7

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/831,992	NICOLAS ET AL.	
	Examiner	Art Unit	
	Kevin Siangchin	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,5 and 9-11* is/are rejected.

7)☒ Claim(s) *3 and 6-8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 August 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5 / May 15, 2001*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Detailed Action

Preliminary Amendments

1. The preliminary amendment filed May 15, 2001 has been made of record. The Claims have been amended accordingly. The amendments to the Title, Specification and Abstract have been acknowledged. These amendments do not introduce new matter.

Drawings

Objections

2. The drawings are objected to because of the following. The axes depicted in Fig. 2 are too light. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

Objections

3. The disclosure is objected to because of the following informalities:

   a. Referring to the Applicant's preliminary amendment, the paragraphs on page 4 (line 10) to page 5 (line 15) do not expound any further on Figs 1-

2 than what was given on page 4, lines 1-9. The Applicant would be better suited placing these paragraphs in either the Summary or the Detailed Description, and maintain lines 1-9 on page 4 as the Brief Description of the Drawings.

b. In the amended Abstract (line 7), the Applicant states, "...matching a current pixel image with a pixel of another image...". Since pixel images are not typically matched to individual pixels, it will be assumed that the Applicant intended this phrase to be "...matching a current image pixel with a pixel of another image...". The Abstract should be changed to reflect this.

c. In the amended Abstract (line 9), the word *othrr* should be changed to *other.*

d. Throughout the Applicant's specification, the Applicant frequently uses the phrase "consisting in" (e.g. Preliminary Amendment page 3, lines 15). Generally, when using the word *consisting* in conjunction with the word *in*, the word *consisting* takes on the meaning *residing.* While this is not an entirely incorrect usage of the word *consist*, within the context of claims 2-3 – e.g. the process of navigation in a 3D scene resides or lies in creating images, etc. – such usage is atypical. Typically, one would use the phrase "consisting of" in such contexts – e.g. the process of navigation in a 3D scene consists of, or comprises, creating images, etc. The Applicant should change all improper instances of the phrase "consisting in" to "consisting of" to ensure that the disclosure adheres to at least a marginal degree of grammatical rigor.

e. The faulty grammar of the phrase "...a *less good* resolution than a

distribution ..." (page 5, lines 19 of the original Disclosure) should be corrected.

f. On page 6, lines 10 of the original disclosure, "of this current image" should be changed to "of the current image".

4. Appropriate correction is required.

Claims

Objections

5. Claim 2-3 are objected to because of the following informalities. On line 6 of Claim 2, the text "(6)" serves no purpose and should be removed.

6. Claims 2-3 use the phrase "in that" (Claim 2, line 5 and Claim 3, line 3). In both instances, the phrase seems to be extraneous, and its removal does not substantially alter the meaning of the claims or their consistency with respect to the Applicant's disclosure. If "that" indeed refers to some previous step of the respective claims (i.e. the calculation of weights in claim 2 and the assignation of relevance in claim 3), then the Applicant should construct the language of claims 2-3 to better reflect this. Appropriate correction is required.

7. Claim 4 is objected to because of the following informality. The language of claim 4 is unnecessarily awkward. Specifically, the phraseology of the following excerpt, "... and ...the other images of the sequence for which the matching of the pixels of the current image is performed are the images of its list", is so poor that it obfuscates the feature being claimed. A more intelligible alternative to this language could be (assuming the aforementioned phrase has been properly deciphered), "... and ... the

images belonging to the list associated with the current image are images of the sequence that are to be used in the matching of the current frame's pixels". Appropriate correction is required.

8. Claim 11 is objected because of the following informality. Claim 11 contains the phrase "consisting in". Following the discussion above, this should be changed to "consisting of". Appropriate correction is required.

9. The Applicant claims his/her invention as a *process*. Although not improper, simply replacing the word *process* with *method* (*process* and *method* are synonymous according to U.S.C. § 100(b)) would make the claim language more consistent with the Applicant's disclosure and Title of Invention.

Rejections Under 35 U.S.C. § 112(2)

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 2 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. *The following is in regard to Claim 2.* In claim 2, the Applicant puts forth a step involving the "*new* selection of the pixels is performed depending on the resolution and weight values assigned to the pixels". This statement implies that there is a selection of pixels (i.e. a *new* selection) following a previous selection, presumably the "selection of a pixel of the current image depending on its resolution and on that of the pixels of other images of the sequence matched with this pixel" put forth in claim 1. This, however, is not consistent with the Applicant's disclosure (see, for example, Fig. 1). According to the disclosure, pixel selection is based on the resolution and the weight (Applicant's original

specification page 7, lines 25-36) and is made subsequent to the calculation of weights. Therefore, there is no prior pixel selection based on the resolution, followed by another (*new*) pixel selection based on the calculated weights and resolution. The selection of pixels put forth in Claim 2 will be treated, henceforth, simply as a "selection of the pixels is performed depending on the resolution and weight values assigned to the pixels", without that selection having the distinction of being *new*.

13. *The following is in regard to Claim 11.* Claim 11 recites "...creating images as a function of the movement of the viewpoint, wherein the images are created on the basis of the process for constructing the 3D model according to Claim 1". The Applicant's invention according to claim 1 has no step or any other means to create images. Rather, the product of the method of claim 1 is a 3D model derived from a sequence of images. Claim 11 will be interpreted, henceforth, as follows:

> Method of navigation in a 3D scene consisting of creating images as a function of the movement of the viewpoint, wherein the images are of different viewpoints of the 3D model derived according to Claim 1 .

Rejections Under 35 U.S.C. § 102(e)

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

15. Claims 1, 9 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Davidson et al.

16. *The following is in regard to Claim 1.* Davidson et al. disclose a method for constructing a 3D scene model by analyzing image sequences, each image corresponding to a viewpoint defined by its position and its orientation (see Davidson et al. Fig. 2 and Abstract), wherein it comprises the following steps:

(1.a.) Calculation, for an image, of a depth map corresponding to the depth, in 3D space, of the pixels of the image. See Davidson et al. Fig. 3, step S10 and note depth is inherent to 3D data.

(1.b.) Calculation, for an image, of a resolution map (i.e. set of calculated inter-point distances (SHIFT) – Davidson et al. Figs. 43-45b) corresponding to the 3D resolution of the pixels of the image, from the depth map (i.e. 3D data - Davidson et al. Fig. 3, step S10). See Davidson et al. column 43, lines 3-4, column 44, lines 1-40. 3D resolution is taken to be the inter-point distance, which is a measure of pixel dispersion. This definition is essentially the same as the Applicant's definition of 3D resolution.

(1.c.) Matching of a pixel of a current image with a pixel of another image of the sequence (e.g. Davidson et al. Fig. 3, step S8, column 7, lines 39-45 and column 10, lines 53-61).

1. The matching is achieved by projecting the pixel of the current image onto the other image (e.g. Davidson et al. column 18, lines 34-59 and/or column 33, lines 38-53 and/or column 41, lines 40-55 and column 42, lines 31-54).
2. The matching pixels relate to one and the same point of the 3D scene (e.g. Davidson et al. Figs. 29a).

(1.d.) Selection of a pixel of the current image depending on its resolution and on that of the pixels of other images of the sequence matched with this

pixel. Notice steps 558-560 of Davidson et al. Fig. 44a. Here, discarding points of excessive inter-point distance (i.e. low 3D resolution), results in the selection of a set of points, and correspondingly a set of pixels, used in the subsequent construction.

(1.e) Construction of the 3D model from the selected pixels (Davidson et al. Fig. 3, steps S12-S14).

It has thus been shown that the 3D model construction method of Davidson et al. sufficiently conforms to the method proposed by the Applicant in claim 1. Therefore, the teachings of Davidson et al. anticipate the method of claim 1.

17. *The following is in regard to Claim 9.* As shown above, Davidson et al. disclose a 3D model construction method that sufficiently conforms to the method of claim 1. In the method of Davidson et al., the pixel of the other image is the pixel closest to the projection point on this other image. See, for example, Davidson et al. Fig. 35. The 3D model construction method of Davidson et al. thus sufficiently conforms to the method proposed by the Applicant in claim 9. Therefore, the teachings of Davidson et al. anticipate the method of claim 9.

18. *The following is in regard to Claim 11.* As shown above, Davidson et al. disclose a 3D model construction method that sufficiently conforms to the method of claim 1. Davidson et al. suggest the usage of the derived model in virtual reality applications (e.g. ones that employ VRML – Davidson et al. column 6, lines 3-5). The following aspects of claim 11 are inherent to virtual reality applications:

(11.a′.) Creating images as a function of the movement of the viewpoint.

(11.b′.) These images are of different viewpoints of a 3D model.

Therefore, a virtual-reality application utilizing a model(s) obtained according to the method of Davidson et al., would constitute a method of navigation in a 3D scene consisting of:

(11.a.) Creating images as a function of the movement of the viewpoint.

(11.b.) These images are of different viewpoints of the 3D model(s) derived according to Claim 1.

This is clearly in accordance with the method proposed in claim 11.

Rejections Under 35 U.S.C. § 103(a)

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson et al., in view of Azarbayejani et al. (U.S. Patent 5,511,153).

21. *The following is in regard to Claim 2.* As shown above, Davidson et al. disclose a 3D model construction method that sufficiently conforms to the method of claim 1. Clearly, the points selected according to the method of Davidson et al. constitute one or more regions. Furthermore, as stated above, the method of Davidson et al. selects pixels depending on the resolution (see the discussion relating to step (1.d) above). However, Davidson et al. do not expressly show or suggest:

(2.a.) Calculation and allocation of weights to the pixels of the image depending

on:

1. whether or not they belong to the regions
2. on the geometrical characteristics of the regions to which they belong in the image.

(2.b.) A selection of the pixels performed depending on the weight values assigned to the pixels.

22. Azarbayejani et al.[1], on the other hand, disclose a method for constructing a 3D scene model by analyzing image sequences, wherein:

(2.a′.) Weights (e.g. $1/(1+Z_C\beta)$ in Azarbayejani et al. equation (2) or α in Azarbayejani et al. equation (3)) are calculated and allocated to the pixels of the image. See Azarbayejani et al. equations (2) and (3), for example. The weights $\alpha_1 \ldots\ \alpha_N$ represent the geometric characteristics or structure of an image feature (i.e. region) to which the pixels belong (Azarbayejani et al. column 6, lines 5-13) and are indicative of whether or not they belong to the feature (Azarbayejani et al. column 5, lines 54-60).

(2.b′.) A selection of the pixels performed depending on the weight values assigned to the pixels (Azarbayejani et al. column 10, lines 52-61).

23. The teachings of Davidson et al. and Azarbayejani et al. are combinable because they are analogous art. Specifically, the teachings of both are directed to 3D model generation from image sequences. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to perform feature tracking (or matching, using Davidson et al.'s nomenclature) in the method of Davidson

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1 Note that the various equations of Azarbayejani et al. will be referred to as (1), (2), (3) and so on, beginning with the equation listed in Azarbayejani et al. column 2, line 40.

et al. according to steps (2.a′.)-(2.b′.) of Azarbayejani et al. One would have been motivated to do so because of the accuracy of Azarbayejani et al.'s method. Combining the teachings of Davidson et al. and Azarbayejani et al. yields a method, in accordance with claim 1, such that:

(2.a.) Calculation and allocation of weights to the pixels of the image depending on:

1. whether or not they belong to the regions
2. on the geometrical characteristics of the regions to which they belong in the image.

(2.b.) A selection of the pixels performed depending on the resolution and weight values assigned to the pixels.

Therefore, such a method would conform to the method proposed in claim 2.

24. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson et al., in view of McAllister et al. ("Real-Time Rendering Techniques of Real World Environments").

25. *The following is in regard to Claim 4.* As shown above, Davidson et al. disclose a 3D model construction method that sufficiently conforms to the method of claim 1. Davidson et al., however, do not expressly show or suggest a partitioning of the images of the sequence characterized by:

(4.a.) Identifying, for a current image, the images whose corresponding viewpoints have an observation field possessing an intersection with the observation field relating to the current image.

(4.b.) Forming a list of images associated therewith.

(4.c.) The list contains images of the sequence that will be used in the matching of the pixels of the current image.

26. McAllister et al. disclose an image-based modeling method that generates a 3D model of an object from a multitude of 2D images (McAllister et al. Abstract). The method entails a partitioning of the images (i.e. into *tiles*) of the sequence (McAllister et al. Section 4.5, paragraph 1) that includes the following:

(4.b.) Forming a list of images associated therewith (McAllister et al. Section 4.6, paragraph 2).

(4.c.) The list contains images of the sequence that will be used in the matching of the pixels of the current image (McAllister et al. Section 4.6, paragraph 2, in particular, lines 4-7).

Note that:

(4.a.) Identifying, for a current image, the images whose corresponding viewpoints have an observation field (i.e. *view frustum* – McAllister et al. Section 4.5 paragraph 1, line 4) possessing an intersection with the observation field relating to the current image.

is inherent to the view-frustum culling of McAllister's et al.'s method. Those view-frustums that are culled correspond to images that sample surfaces which are disjoint from the surfaces imaged by the retained view-frustums. One can conclude from this that the retained and culled view-frustums are divergent. Thus, the view-frustum culling represents an implicit identification of intersecting view-frustums (i.e. retained view-frustums). That is, the retained view-frustums are those that intersect.

27. The teachings of McAllister et al. and Davidson et al. are combinable because they are analogous art. Specifically, the teachings of both are directed toward the construction of 3D models of scenes from a collection of 2D images. Therefore, it would

have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to integrate the partitioning scheme of McAllister et al. into the method of Davidson et al. The motivation to do so would have been to and eliminate redundant views and imagery from the data set (McAllister et al. Section 4.5, paragraph 1, sentence 3), thereby, improving rendering efficiency (McAllister et al. Section 4.6, last sentence) and storage overhead. Combining the teachings of McAllister et al. and Davidson et al., in this manner, yields a 3D modeling method that conforms substantially to that of claim 4.

28. *The following is in regard to Claim 5.* As just shown, the teachings of McAllister et al. and Davidson et al. can be combined to yield a method that adequately satisfies the limitations of claim 4. Furthermore, the partitioning of the images of the sequence, according to the teachings of McAllister, is performed by removing, from the list associated with an image, the images which possess too few pixels corresponding to those of the current image (McAllister et al. Section 4.6, paragraph 2). Therefore, combining the teachings of McAllister et al. and Davidson et al., in the manner discussed above, yields a 3D modeling method that conforms substantially to that of claim 5.

29. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson et al., in view of La Roux et al. ("An Overview of Moving Object Segmentation in Video Images", IEEE, 1991).

30. *The following is in regard to Claim 10.* As shown above, Davidson et al. disclose a 3D model construction method that sufficiently conforms to the method of claim 1. As mentioned above, Davidson et al. attempt to find pixels in the sequence of images that correspond to the same (or approximately the same) 3D point of the imaged scene or

object. The following problems associated with deriving stereo correspondences between images of moving objects are well known. Besides potentially inducing undesirable motion blur in the captured images, the movement of an object makes the derivation of correspondences between images of an image sequence extremely difficult or impossible. Though it would be apparent to one of ordinary skill in the art, the method of Davidson et al. does not provide a means to remedy this potential problem.

31. Le Roux, et al. describe several methods to differentiate and extract regions corresponding to moving objects in video images (Le Roux et al. Introduction).

32. The teachings of Le Roux et al. and Davidson et al. are combinable because they are analogous art. In particular, the teachings of both Le Roux et al. and Davidson et al. are directed toward the processing of a sequence of images. Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the applicant's claimed invention, to use moving object segmentation, according to any of the various techniques discussed by Le Roux et al., to extract regions corresponding to moving objects from the collection of images used by the method of Davidson et al. to generate a 3D model. The motivation for doing so would have been to eliminate regions corresponding to moving objects from the collection of images. By eliminating these regions, correspondences, and hence a 3D model, can be derived for regions of these images that do not move. Combining the teachings of Le Roux et al. and Davidson et al., in this manner, yields a 3D modeling method that conforms substantially to that of claim 10.

Allowable Subject Matter

Objections, Allowable Subject Matter

33. Claims 6-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

34. The following is a statement of reasons for the indication of allowable subject matter.

35. *The following is in regard to Claims 6-8.* In and of themselves, the substantive limitations set forth in claims 6-8 introduce nothing over similar prior art methods. However, by virtue of their dependence on allowable claim 3 (see below), these claims, in turn, propose allowable subject matter.

Allowable Subject Matter

36. Claim 3 is allowed.

37. The following is a statement of reasons for the indication of allowable subject matter.

38. *The following is in regard to Claim 3.* As mentioned above with respect to claims 1-2 , the method obtained by combining the teachings of Davidson et al. and Azarbayejani et al., involves assigning both a weight and resolution to pixels of the current image. Though one could arbitrarily designate these values as collectively constituting a *relevance value*, this does not follow directly or impliedly from the teachings of Davidson et al. or Azarbayejani et al. or, for that matter, any encountered

prior art methods. Despite this, it would be apparent, if one were to devise such a reference value, that in order for it to be meaningful – or, more specifically, for it to denote the relevance of pixels – within the context of the method obtained by combining the teachings of Davidson et al. and Azarbayejani et al. – the relevance value should be directly proportional to the resolution. This follows from the teachings of Davidson et al. (Davidson et al. Fig. 44a, steps S558-S560). Taking this into account, selected pixels, which according to Davidson et al. have highest 3D resolution (pixels with SHIFT $\leq$ 10% of object size), would, in turn, have the highest relevance value among all image pixels. Providing an indication (e.g. a table) indicating which pixels are selected would be inherent to the process of selection. Such a collection can be considered a *mask.* Though these latter aspects of claim 3 follow implicitly from a meaningful notion of *relevance value* within the context of the method above, it cannot be said that these aspects would be readily apparent from the teachings of Davidson et al. or Azarbayejani et al. or any encountered prior art methods. In this manner, the subject matter of claim 3 is unique and non-obvious with respect to the encountered prior art methods.

Citation of Relevant Prior Art

39. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

The following references relate to systems and methods that generate 3D models from image sequences. They have particular relevance to the various projection techniques disclosed by the Applicant.

[1] *U.S. Patent 6,731,283.* Navab. Publication Date: May 2004.

[2] *U.S. Patent 5,818,959*. Webb et al. Publication Date: October 1998.

The following references disclose systems and methods that generate 3D models from image sequences.

[4] *U.S. Patent 6,278,460*. Myers et al. Publication Date: August 2001

[5] *Metric 3D Surface Reconstruction from Uncalibrated Image Sequences.* Proc. SMILE Workshop (post-ECCV'98), LNCS 1506, pp.138-153, Springer-Verlag, 1998. Pollefeys et al.

The method Pollefeys et al. calculates the fundamental matrix for each pair of views in the sequence of images. The derived matrices provide a projection of points from one view to the other of the pair. Pollefeys et al. also discuss a relevance (*interest points*) assigned to pixels, as well as pixel resolution (i.e. pixel width and height with respect to a 3D reference space).

Other relevant prior art includes:

[7] *U.S. Patent 6,124,864*. Madden et al. Publication Date: September 2000.

Madden et al. disclose an method that generates a 3D model from visual image streams. The method involves partitioning the images of the image sequence.

[8] *U.S. Patent 6,208,347*. Migdal et al. Publication Date: March 2001.

Migdal et al. disclose a method for 3D model construction that has a dynamic resolution capability, wherein the model is simplified by taking into consideration the resolution of 3D points constituting it. Migdal et al. also ascribe a relevance to points which incorporates their resolution.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Siangchin whose telephone number is (703)305-7569. The examiner can normally be reached on 9:00am - 5:30pm, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin Siangchin
Kevin Siangchin
Examiner
Art Unit 2623

ks – 07/30/04

AMELIA M. AU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600